

IMPACT OF MKIS ON INDIAN FINANCIAL SERVICE SECTOR

L. KULADEEP KUMAR¹ & J. KATYAYANI²

¹Research Scholar, Department of Management Studies, S.C.S.V.M.V., Enathur, Kanchipuram, Tamilnadu, India

²Research Guide, Professor & BOS Chairperson, Department of Business Management,
Sri Padmavati Mahila, Visvavidyalayam, Tirupati, Andhra Pradesh, India

ABSTRACT

The goals of Marketing Information System are easily expressed in single phrase: to provide timely and accurate information as and when marketing manager need at a less cost. Specifically, the information provided should be timely, accurate, relevant and economical, because information cannot always be anticipated, with the implicit goal of flexible system to handle a variety of situations and adapt easily the changing conditions.

KEYWORDS: Strengthening the Foundations of the Banking System, Implicit Goal of Flexible, To Find Factors of Influence for the Effective MKIS

INTRODUCTION

The far-reaching changes in the Indian economy since Liberalization had a deep impact on the Indian Financial Service sector. Financial sector reforms that were initiated by the Government of India since early 90's have been met the challenges of complex financial architecture of India. This has ensured that the new emerging face of the Indian financial sector will culminate in a strong, transparent and resilient system.

Broadly, financial sector reforms can be categorized into two phases. The first phase of economic reforms that started in 1985 focused on increasing productivity, new technology import and effective use of human resources. These efforts were in line with the changes in international markets, organizations and production areas. In second phase, beginning in 1991-92, the Government aimed at reducing fiscal deficit by opening the economy to foreign investments. Financial sector reforms during the above focused on the modification of the policy framework, improvement in financial health of the entities and the creation of competitive environment. These reforms targeted three interrelated issues viz. (i) strengthening the foundations of the banking system; (ii) streamlining procedures, upgrading technology and human resource development; and (iii) structural changes in the system.

The last decade witnessed a significant broadening and deepening of financial markets with the introduction of several new instruments and products in banking, insurance and capital markets space. During this time, the Indian financial sector (banking, insurance and capital markets) opened up to new private players including foreign companies. The new players adapted international best practices and modern technology to offer a more sophisticated range of financial services to corporate, retail and institutional customers. The consequent competition in the market brought innovation, better customer service and efficiency in the financial sector in India.

India's services sector has been the most dynamic part of its economy, leading GDP growth for the past two decades.

Many companies are finding that the best way to attract and retain the customers is to deliver an outstanding customer experience. Whether you specialize in offering products for banking, wealth management, or insurance, MKIS

helps the Financial Services industry. To develop meaningful and enduring relationships with their customers, the companies are progressing towards profitability and operational efficiency.

NEED FOR THE STUDY

The goals of Marketing Information System are easily expressed in single phrase: to provide timely and accurate information as and when marketing manager need at a less cost. Specifically, the information provided should be timely, accurate, relevant and economical, because information cannot always be anticipated, with the implicit goal of flexible system to handle a variety of situations and adapt easily the changing conditions.

OBJECTIVES OF THE STUDY

The present study carries the following objective.

- To find factors of influence for the effective MIKS

REVIEW OF LITERATURE

One common element in most studies (Shannon and Weaver, 1949; Mason, 1978; Wierenga and Ophuis, 1997; Seddon 1997; Garrity and Sanders, 1998; Wierenga et al., 1999; DeLone and McLean, 1992; 2003) is that effectiveness has been conceived as a function influenced by multiple variables.

In evaluating the contribution of information systems to the organization, a strong research stream has focused on the processing system itself. Within this framework, most measures tap engineering-oriented performance characteristics such as the usefulness of specific functions (Hiltz and Turoff, 1981), the stored record error rate (Morey, 1982), the response time (Belardo, Karwan and Wallace 1982), its flexibility (Mahmood, 1987), the convenience of access, (Bailey and Pearson, 1983). Furthermore, Adams et al., (1992) underline the ease in using the system as a system quality measurement variables by making known issues regarding the use facility the users anticipate (Franz and Robey, 1986) and is friendly working environment (Doll and Torkzadeh 1988, Hendrickson et al., 1993, Chin and Todd, 1995, Seddon, 1997). They suggest that an information system containing state-of-the-art technology and software along with functional features such as accuracy, process speed, responsiveness timeliness accessibility of easy use, friendly working environment, are the base for effective functional information system.

The importance of information quality has been recognized by many researchers as a key ingredient in evaluating a successful system. It concerns the dimensions of the information in particular, as suggested by Bailey and Pearson (1983), the accuracy, format (Magal 1991; Rainer and Watson, 1995; Myers et al., 1998), currency, timeliness (Mahmood, 1987), precision, completeness, conciseness, reliability, relevance.

Those two variables, system quality and information quality seem to be the design characteristics of the system that determine the MrkIS effectiveness in organizational level (Wierenga et al., 1999).

Furthermore, Pitt et al., (1995), state that the IS effectiveness is highly dependant on the information quality, the Information Systems Department provides to users. They underline the fact that the role of the department has been continually developed from one of the Product Developer to the Services Provider. This can be concluded by the fact that their role is no longer limited to the installation of new software programs or the settlement of technical problems only. The introduction of personal computers in a company and their diffusion to nearly every department results in the almost daily communication, of the users with the information systems support department as they wish to ask for both relative information and services.

Subsequently, many researchers (Kettinger and Lee, 1997, Li, 1997, Wilkin and Hewitt, 1999, DeLone and McLean, 2003) agreed on the fact that the quality of the services rendered by the IS support department should be the main objective in the pursuit of measuring the information systems' effectiveness. This is due to the fact that the support the users receive is of a vital meaning to the way they could : a) get acquainted with the information systems, b) integrate them in their business concept, lastly, c) transform the potential benefits they entail into personal ones and, consequently, into business benefits.

Nevertheless, despite all the relevant important disputes and arguments, the majority of the above mentioned researchers converge on the fact that the major variables affecting the information systems effectiveness, are: a) the system quality, b) the information quality and c) the support services' quality, d) system compatibility and e) flexibility.

Based on the above discussion that MrkIS is a specific type of an Information System and its effectiveness was hypothesized that:

RESEARCH HYPOTHESIS

H1: The system quality, the information quality, the support service quality compatibility and flexibility have a positive impact on the MrkIS Effectiveness.

Moreover, Wierenga et al., (1999) note that the system integration is an another design characteristic which affects the MrkIS system effectiveness. Also, another interesting research of Saaksjarvi and Talvinen (1993) mentions the need for the MkIS integration. They divide the MkIS integration in two axes, namely: a) the technical integration by defining it as the need for all of the IS existing in a company to work, from the technical point of view, harmonically and effectively together, b) the functional integration, as the need for a systematic redesign of several functions of MkIS entails.

They support the ascertainment that the functional integration in an effort of radical processes' re-definition attuned with the technical integration results in the increase of MKIS effectiveness. The benefits deriving from the MKIS integration are important and they are mentioned on many levels, such as: the improvement of targeting potential customers and already existing ones, the enhancement of service quality rendered both to the personnel (internal) and the customers (external), the successful anticipation of sales as well as their increase, and lastly, cost reduction (Graham, 1987, Townend 1989, Burns and Ross, 1991).

The MKIS compatibility with the rest of the information systems of a company as well as the MKIS flexibility of adapting to the marketing departments future needs are the basic factors regarding the MKIS (Saaksjarvi and Talvinen, 1993) effectiveness definition.

The compatibility and the communication with the rest of the IS that either exist or pre-exist in a company (e.g. Transaction Processing System, Management Information System, Decision Support Systems, Executive Information Systems e.t.c.) are vital presuppositions in order for the issues the marketing executives are called to respond to, present a better and more integrated picture.

Furthermore, the flexibility of adapting to the marketing department needs a fundamental variable of defining the system's effectiveness. The company's needs, and in particular those of the marketing department are continuously re-defined. This actually reflects the constantly changing competitive environment in which the companies are currently operating. Therefore, the MKIS flexibility is an important object of research with reference to the effort of responding to the marketing executives needs.

RESEARCH METHODOLOGY

Data Collection

In the present study the questionnaire method has been adopted to collect information from the respondents distributed to the Marketing executives of Financial Service sector. The data collection through mail survey and personal interview method is employed through Stratified Random Sampling. A total of 238 questionnaires were distributed among Marketing Executive of Financial service Industry out of these, 168 i.e., 70% dully filled Questionnaires were received. The highest response came from the Banking Industry (42.85%), followed by Insurance Sector (28.6%). The data is presented in table 1

Table 1: Distributions of Respondents

Name of the Industry	% of Respondent
Banks	72 (42.85%)
Insurance	48 (28.6%)
Mutual Funds	12 (7.14%)
Others	36 (21.41%)
Total	168 (100%)

VARIABLES MEASUREMENT

Marketing Information Systems Effectiveness

The MKIS effectiveness scale is constructed using integration of CVM model of Saaksjarvi and Talvinen's (1993), ELAM model and Carmon (1994) Service quality. The CVM model reflects all the levels in which a company seeks its improvement through the MKIS.

According to the suggestions of executives' who helped in the development of the research instrument, the scales were enriched with items aiming to capture the MKIS effectiveness in relation to certain dimensions of the marketing mix, such as promotion, communications, pricing, etc. The scale included 38 items and the respondents were asked to answer on a 7-point scale (1="I strongly disagree" to 7="I strongly agree"). The Multiple Regression analysis applied on the collected data on the results are tabulated in the table 1.2.

System Quality

The system quality was measured through the criteria used by Bailey and pearson (1983) and Hendrickson (1993). To be more specific, the scale included questions (items) with reference to functional features, such as; accuracy, easy access; internal communication, friendly working environment. The respondents where called to indicate their agreement with each item using 7 point agreement scale. An acceptable level of cronbach's alpha ($\alpha=0.5$) allowed us to create an additive scale which was used in subsequent analysis.

Information Quality

Information quality was measured using the scale developed by Bailey and Pearson (1983). In this study respondents were asked to indicate their agreement with each item using a 7 point agreement scale. An acceptable level of cronbach's alpha ($\alpha=0.6676$) allowed us to create an additive scale which was used in subsequent analysis.

Service Quality

Despite the fact that the SERVQUAL model is used in the majority of researchers for the quality measurements the extersive literature review (Babakus and Boller 1992; Carman 1907 led to coroclusion that the SERVQUAL usage as the IS support service quality measurement instrument has many problems both methodological and practical.

Based on the afore said conclusions, this study makes use of the Inoserv scale (Gounaris S and Venetis K. 2002), an industrial service quality evaluating model.

Support service quality was measured using the scale developed by Gounaris (2002). Respondents were also asked to indicate their agreement with each item using 7 point scale. An acceptable level of cronbach's alpha ($\alpha=0.6671$) allowed us to create an additive scale

Compatibility

For the measurement of the marketing information system compatibility the scale data from George G. study was used the impact of design characteristics and support services on the effectiveness of marketing information system was used in subsequent analysis.

Flexibility

The flexibility of system was measured by Kalliopi.cin 7 point scale measurement was used in subsequent analysis. An acceptable level of cronbach's alpha ($\alpha=0.4029$) allowed us to create an additivity scale.

ANALYSIS

Table 2: Multiple Regression Co-Efficient of MKIS Effectiveness in Indian Financial Service Sector

Factors	Constant . β	X1	X2	X3	X4	X5	R	R ²	Adjusted R ²	Error of Model Estimation
Co-ordination of functional groups	3.019	0.006	0.069	*0.433	0.121	0.088	0.237	0.056	0.051	0.137
Marketing budget	4.399	0.074	-0.014	-0.028	0.091	*0.201	0.161	0.026	0.028	0.096
Product analysis	2.587	*0.169	0.094	0.133	0.139	*0.309	0.2439	0.059	0.0539	0.555
Project management	4.435	-0.024	-0.030	0.012	-0.052	*0.211	0.156	0.024	0.019	0.103
Decision making	3.925	*0.274	0.125	0.030	-0.026	0.142	0.268	0.072	0.066	0.077
Operational planning	3.711	0.131	*0.125	0.014	0.99	0.132	0.125	0.63	0.58	0.105
Promotion budget	4.271	-0.083	0.270	*0.152	0.083	0.046	0.192	0.037	0.031	0.107
Market analysis	3.698	0.125	*0.330	0.105	-0.023	-0.001	0.270	0.073	0.067	0.091
Product performance	2.786	0.025	-0.017	*0.508	0.086	-0.022	0.387	0.150	0.145	0.094
Distribution channels	3.738	0.052	*0.345	0.131	0.039	0.124	0.284	0.081	0.075	0.090
Training for executives marketing	2.738	0.209	*0.496	0.146	-0.051	0.252	0.362	0.131	0.126	0.091
Product design	3.081	0.148	0.013	0.433	0.077	0.201	0.299	0.090	0.084	0.107
Promotion evaluation	3.994	*0.172	*0.289	0.128	0.144	0.117	0.274	0.075	0.069	0.071

X1 : System quality
X2 : Information quality
X3 : Support service quality
X4 : Compatibility

X5	:	Flexibility
*	:	Predictor variables for independent factor
R	:	Linear correlation
R²	:	Co-efficient of determination
Adjusted R²	:	% of variation in dependent variables

Findings

For the hypothesis examination, analysis of multiple regressions MKIS model variables as dependent variables the system quality, the information quality, the support services quality, the compatibility and flexibility as independent variables were run.

The multiple regression table 2 provides linear correlation (R) adjusted R² representing percentage of variance in dependent variables of MKIS.

By using MKIS operational planning is effectively implemented in Indian Financial Service Sector when compared to remaining factors of the model.

- In MKIS dimensions the good co-ordination of functional groups is predicted by effectiveness of support service quality (5.1%).
- The Marketing budget function effectiveness depends on MKIS flexibility (2.8%).
- Product analysis works effectively on two variables one is system quality and another is flexibility (5.9%).
- Project management works effectively when MKIS is having flexibility (2.4%).
- Fast decision making depends on MKIS system quality (7.2%).
- Operational Planning is enriched by Information Quality provided by MKIS (63%).
- Promotion budget (2.7%) market analysis (7.3%) and distribution channels (8.1%).
- Product performance will give best result if MKIS support service quality is good (15%).
- Training for marketing executives depends on three variables in MKIS i.e., System Quality, Information Quality and Flexibility (13%).
- Product design depends on Support Service Quality of MKIS (8.4%).
- One of the factor in MKIS called promotion evaluation depends on Information Quality (27.4%).

The results of our research, the System Quality, Information Quality, Support Service Quality, Compatibility and Flexibility are statistically significant ($p=0.000$), which leads us to the acceptance of Hypothesis.

CONCLUSIONS

The spreading of information amidst the departments / functions of the company is attained with the harmonious co-operation of the company's IS. The high quality of the said information actually leads the Marketing Executives to locate all the possible parameters of an issue. Subsequently, helping them to make the right decision both in the stage of marketing programs planning and development and in the stage of the control and adjusting actions required.

Mainly the three factors i.e., Marketing Budget, product analysis and project Management depends upon contingency of MKIS flexibility.

Whereas MKIS system quality gives the priority for decision making and promotion evaluation in the organization.

On the other hand MKIS support Service Quality has a stronger impact on effective dimensions, especially when they are related to the co-ordination of functional groups, product performance and product design. This seems justified from the continuously changing environment which imposes the industry to re-examine and reformulation of its process.

REFERENCES

1. Ackoff, R.L., 1967, Management misinformation systems. *Management Science* 14, B-147-B-156.
2. Anderson, C.R. Zeithami, C.P., 1984. Stage of the product life cycle, business strategy, and profitability. *Journal of Marketing* 58, 53-66.
3. Anderson, E.W., Fornell, C., Lehmann, D.R., 1994. Customer satisfaction, productivity and profitability. *Journal of Marketing* 58,53-66.
4. Bakos, Y.J., 1987, Dependent variables on the study of firm and industry-level impacts on information technology. In: *Proceedings of the Eighth International Conference on Information Systems*, pp. 10-23.
5. Bakos, Y.J., Treacy, M.E., 1986. Information technology and corporate strategy: a research perspective. *MIS Quarterly* 10, 107-119.
6. Bailey, J.E., Pearson, S.W. 1983. Development of a tool for measuring and analyzing computer user satisfaction. *Management Science* 29, 530-545.
7. Banker, R.D., Kauffman, R.J., Morey, R.C. 1990. Measuring gains in operational efficiency from information technology: a study of position deployment at Hardee's Inc. *Journal of Management Information Systems* 7, 29-54.
8. Barney, J.B., 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17, 99-120.
9. Barua, A., Kriebel, C.H., Mukhopadhyay, T., 1995. Information technologies and business value: an analytic and empirical investigation. *Information Systems Research* 6, 3-23.
10. Brynjolfsson, E., Hitt, L, 1996. Paradox lost? Firm-level evidence on the returns to information systems spending. *Management Science* 42, 541-558.
11. Carr, C.L., 2002. A psychometric evaluation of the expectations, perceptions, and difference-scores generated by the IS-adapted SERVQUAL instrument. *Decision Sciences* 33, 281-296.
12. Clikeman, P.M., 1999. Improving information quality. *Internal Auditor*, 32.
13. Cronin, J.J., Taylor, S.A., 1994. SERVPERF versus SERVQUAL: reconciling performance-based and perceptions-minus-expectations measurements of service quality. *Journal of Marketing* 58, 125-131.
14. DeLone, W.H., McLean, E.R., 1992. Information systems success: the quest for the dependent variable. *Information System s Research*, 60-95.
15. DeLone, W.H., McLean, E.R., 2003. The DeLone and McLean model of information system success. *Journal of management Information System* 19, 9-30.
16. Diaz, M., Sligo, J., 1997. How software process improvement helped Motorola. *IEEE Software*, 75-81.

17. Doll, M.J., Xia, W., Torkzadeh, G., 1994. A confirmatory factor analysis of the end-user computing satisfaction instrument. *MIS Quarterly* 18, 453-461.
18. Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18, 39-50.
19. Gable, G.G., Sedera, D., Chan, T., 2003. Enterprise systems success: a measurement model. In: *Proceedings Twenty-Fourth International Conference on Information Systems*, pp. 576-591.
20. Galup, S.D., Dattero, R., Quan., J.J., Conger, S., 2009. An overview of It service management. *Communications of the ACM* 52, 124-127.
21. Gefen, D., Straub, D., 2005. A practical guide to factorial validity using PLS-graph: tutorial and annotated example. *Communications of the AIS* 16, 91-109.
22. Grant, R.A., 1989. Building and testing a model of an information technology's impact. In: DeGross. J.I., Henderson, J.C., Konsynski, B.R. (Eds.), *Proceedings of the Tenth International Conference on Information Systems*. Boston, MA, pp. 173-184.
23. Hair Jr., J.F., Anderson, R.E., Tatham, R.L. Black, W.C. 1998. *Multivariate Data Analysis*, fifth ed. Prentice Hall, Englewood Cliffs, NJ.
24. Hendricks, K.B., Singhal, V.R., Stratman, J.K., 2007. The impact of enterprise systems on corporate performance. A study of ERP, SCM, and CRM system implementations. *Journal of Operations Management* 25, 65-82.
25. Huh, Y.U. Keller, F.R., Redman, T.C., Watkins, A.R., 1990. Data quality. *Information and Software Technology* 32, 559-565.
26. Iivari, J., 2005. An empirical test of the DeLean model of information system success. *The Data Base for Advances in Information Systems* 36 (Spring), 8-27.
27. Johnson, M.W., Hatelly, A., Miller, B.A., Orr, A, 2007. Evolving standards for IT service management. *IBM Systems Journal* 46, 583-597.
28. Kahn, B.K., Strong, D.M., Wang, R.Y., 2002. Information quality benchmarks: product and service performance. *Communications of the ACM* 45, 184-192. Kearns, G.S., Leaderer. A.L., 2004. The impact of industry contextual factors on IT focus and the use of IT for competitive advantage. *Information and Management* 41, 899-919.
29. Kettinger, W.J., Lee, C.C., 1997. Pragmatic perspectives on the measurement of information system service quality. *MIS Quarterly* 21, 223-240.
30. Kettinger, W.J., Lee, C.C., 2005. Zones of tolerance. Alternative scales for measuring information systems service quality. *MIS Quarterly* 29 (December), 607-623.
31. Kohil, R., Devaraj, S., 2003. Measuring information technology payoff: a meta-analysis of structural variables in firm-level empirical research. *Information Systems Research* 14, 127-145.
32. Kuechler, W.L., McLeod, A., Simkin, M.G., 2009. Why don't more students major in IS. *Decision Sciences Journal of Innovative Education* 7, 463-488.
33. Lee, S.C., 2001. Modeling the business value of information technology. *Information and Management* 39, 191-210.

34. Luftman, J., Kempaiah, R., 2008. Key issues for IT executive 2007. *MIS Quarterly Executive* 7, 99-112.
35. Mahmood, Mo.A., Mann, G.J., 2000. Special issue: impact of information technology on organizational performance. *Journal of Management Information Systems* 17, 3-10.
36. Malhotra, N.K., Kim, S.S., Patil, A., 2006. Common method variance in IS research: a comparison of alternative approaches and a reanalysis of past research. *Management Science* 52, 1865-1883.
37. Mata, F.J., Fuerst, W.L., Barney, J.B., 1995. Information technology and sustained competitive advantage: a resource-based analysis. *MIS Quarterly* 19, 487-505.
38. McConnel, S., 2002. The business of software improvement. *IEEE Software* (July/August), 5-7.
39. Melville, N., Kraemer, K., Gurbaxani, V., 2004. Review: information technology: a study of electronic data interchange. *MIS Quarterly* 19, 137-156.
40. Nelson, R.R., Todd, P.A., Wixom, B.H., 2005. Antecedents of information and system quality: an empirical examination within the context of data warehousing. *Journal of Management Information Systems* 21, 199-235.
41. Osei-Bryson, K.-M., Ko, M., 2004. Exploring the relationship between information technology investments and firm performance using regression splines analysis. *Information and Management* 42, 1-13.
42. Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing* 64, 12-40.
43. Pamas, D.L., 2003. The role of inspection in software quality assurance. *IEEE Transactions on Software Engineering* 29, 674-676.
44. Petter, S., DeLone, W., McLean, E., 2008. Measuring information system success: models, dimensions, measures, and relationships. *European Journal of Information Systems* 17, 236-263.
45. Pitt, L.F., Watson, R.T., Kavan, C.B., 1995. Service quality: a measure of information system effectiveness. *MIS Quarterly* 19, 173-187.
46. Prybutok, V.R. Zhang, X., Ryan, S.D., 2008. Evaluating leadership. IT quality, and net benefits in an e-government environment. *Information and Management* 45, 143-152.
47. Porter, M., 1985. *Competitive Advantage*, Free Press.
48. Rai, A., Song, H., Truitt, M., 1998. Software quality assurance; an analytical survey and research prioritization. *Journal of Systems and Software* 40, 67-84.
49. Ravichandran, T., Rai, A., 2000. Total quality management in information systems development: key constructs and relationships. *Journal of Management Information Systems* 16, 119-155.
50. Redman, T.C., 1998. The impact of poor data quality on the typical enterprise. *Communications of the ACM* 41, 79-82.
51. Reeves, C.A., Bednar, D.A., 1994. Defining quality: alternatives and implications. *Academy of Management Review* 9, 419-445.
52. Reicheld, F.F., Sasser, E., 1990. Zero defections: quality comes to services. *Harvard Business Review* 68, 105-111.

53. Ringle, C.M., Wende, S., Will, A., 2005. Smart PLS. University of Hamburg, Hamburg, Germany.
54. Sabherwal, R., Jeyaraj, A., Chowa, C., 2006. Information system success: individual and organizational determinants. *Management Science* 52 (12). 1849-1864.
55. Salmela, H., 1997. From information system quality to sustainable business quality. *Information and Software Technology* 39, 819-825.
56. Santhanam, R., Hartono, E., 2003. Issues in linking information technology capability to firm performance. *MIS Quarterly* 27, 125-153.
57. Sedera, D., Gable, G., 2004. A factor and structural equation analysis of the enterprise systems success measurement model. In: Appelgate, L., Galliers, R., DeGross, J.I. (Eds.), *Proceedings of the Twenty-Fifth International Conference on Information Systems*. Association for Information Systems, Washington, DC, USA, p. 449.
58. Seddon, P.B., 1997. A respecification and extension of the Delone and McLean model of IS success. *Information Systems Research* 240, 240-253.
59. Sethi, V., Carraher, S., 1993. Developing measures for assessing the organizational impact of information technology: a comment on Mahmood and Soon's paper. *Decision Sciences* 24, 867-877.
60. Sethi, V., King, W.R., 1994. Development of measures to assess the extent to which an information technology application provides competitive advantage. *Management Science* 40, 1601-1627.
61. Sharma, R., Yetton, P., Crawford, J., 2009. Estimating the effect of common method variance. The method-method pair technique with an illustration from TAM research. *MIS Quarterly* 33, 473-490.
62. Slaughter, S., Harter, D., Krishnan, M., 1998. Evaluating the cost of software quality. *Communications of the ACM* 41 (April), 67-73.
63. Soteriou, A.C., Chase, R.B., 2000. A robust optimization approach for improving service quality. *Manufacturing & Service Operations Management* 2, 264-286.
64. Straub, D., Boudreau, M.-C., Gefen, D., 2004. Validation guidelines for IS positivist research. *Communications of the AIS* 13, 38-427.
65. Straub, D.W., Burton-Jones, A., 2007. Veni, Vidi, Vici: breaking the TAM logjam. *Journal of the Association for Information Systems*, 223-229.
66. Strong, D.M., Lee, Y.W., Wang, R.Y., 1997. 10 Potholes in the road to information quality. *IEEE Computer* (August), 38-46.
67. Swanson, B., 1997. Maintaining IS quality. *Information and Software Technology* 39, 845-850.
68. Tallon P.P., Kraemer, K.L., Gurbaxani, V., 2000. Executives' perceptions of the business value of information technology: a process-oriented approach. *Journal of Management Information Systems* 16, 145-173.
69. Tallon, P.P., Kraemer, K.L., 2007. Fact or fiction? A sensemaking perspective on the reality behind executives' perception of IT business value. *Journal of Management Information Systems* 24, 13-54.

70. Teo, T.S., Wong, P.K., 1998. An empirical study of the performance impact of computerization in the retail industry. *Omega: International journal of Management Science* 26, 611-621.
71. Thong, J.Y.L., Yap, C.-S., Raman, K.S., 1996. Top management support, external expertise and information systems implementation in small businesses. *Information Systems Research* 7, 248-267.
72. Torn, A.A., 1990. Models of software accumulation. *Journal of Systems and Software* 12, 39-42.
73. Van Dyke, T.P., Kappeiman, L.A., Prybutok, V.R., 1997. Measuring information systems service quality: concerns for the use of the SERVQUAL questionnaire. *MIS Quarterly* 21, 195-208.
74. Venkatraman, N., Ramanujam, V., 1987. Measurement of business economic performance: an examination of method convergence. *Journal of Management* 13, 109-122.
75. Verhagen, T., Dolen, W.v., 2009. Online purchase intentions: a multi-channel store image perspective. *Information & Management* 46, 77-82.
76. Wang, R.Y., Strong, D.M., 1996. Beyond accuracy: what data quality means to data consumers. *Journal of Management Information Systems* 12, 5-34.
77. Watson, R.T., Pitt, L.F., Kavan, C.B., 1998. Measuring information systems service quality: lesson from two longitudinal case studies. *MIS Quarterly* (March), 61-79.
78. Whittaker, J.A., Voas, J.M., 2006. Years of software: key principles for quality. *Software Quality Management Magazine* 3 (January), 5-8.
79. Wixom, B.H., Watson, H.J., 2001. An empirical investigation of the factors affecting data warehousing success. *MIS Quarterly* 25, 17-41.
80. Wu, J.-H., Wang, Y.-M., 2006. Measuring KMS success: a respecification of the DeLone and McLean's model. *Information and Management* 43, 728-739.

